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ABSTRACT

In order to determine the extent to which Pass/Fail grading affects the learning process by altering student motivation, the author studied the grades of 61 Pass/Fail and 61 traditionally graded students who had enrolled in the "Introduction to Africa" course at York College (Pennsylvania) during the three semesters of 1973-74. All students had the same instructor, and all students were assigned traditional grades according to the same criteria; only the student and the Records Office knew of the student's choice of Pass/Fail or traditional grading. Results of comparing the grades of all 61 Pass/Fail students against those of all 61 traditionally graded students indicated no significant difference between the two groups. However, when the variables of sex, intelligence (IQ), academic achievement (GPA), class status, course load, and college major (stratified random sample) were controlled, the course grade means were significantly different at the .05 level of confidence, suggesting that students who elect to take a course Pass/Fail may not be as motivated to learn as those who choose to be graded conventionally. A literature review and a bibliography are included. (DC)

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TITLE OF RESEARCH PRACTICUM

A Comparison Of Subject Matter Acquisition Between Students Who Elect "Pass/Fail" And Those Who Accept Traditional Grading In An Introduction To Africa Course At York College

by

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York College of Pennsylvania

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1. Title

The research study is entitled, "A Comparison Of Subject Matter Acquisition Between Students Who Elect 'Pass/Fail' And Those Who Accept Traditional Grading In An Introduction To Africa Course At York College."

2. Statement of Problem

The problem presents the question, "Do students at York College who elect pass/fail perform any different, in regard to subject matter acquisition, from students who accept traditional grading?"

3. Hypothesis

The hypothesis postulates that course "grade average" between students who elect pass/fail and those who accept traditional grading is not significantly different.

4. Background and Significance of Study

Differential grading systems are in vogue. Dissatisfaction with traditional grading practices has encouraged the development of myriad approaches to student evaluation. Included are pass-fail, credit-no credit, satisfactory-unsatisfactory, self-evaluation, evaluation by report and ad infinitum with differences probably more semantic than actual. The consistency seems to be a persistent disenchantment by both students and teachers with the letter grade and a desire to find a better method of evaluation. The focus of this study is the question, "To what extent does a pass/fail system effect the learning process by altering student motivation?"

Both faculty and students are prone to assume that learning and grading are related. Students who advocate pass/fail frequently use as leverage the

notion that learning is enhanced through release from the artificial pressure of grading. Interestingly, faculty use the same argument, only in reverse, stating that the motivational pressure of grading enhances learning. The study proposes to test the validity of this argument.

Since a review of the literature can often be as valuable to the reader as the actual study, an effort will be made to present the review in a systematic easily understood fashion.

P. T. Bain (1973) in a research study entitled, "An Investigation of Some Assumptions and Characteristics of the Pass/Fail grading System," compared the pre and post pass/fail GPA of 400 undergraduates at Ohio State and discovered that the undergraduate students earned lower grades in pass/fail courses (both in and out of the major) than previous grade point averages would predict.

James L. Battersby (1973) in an article entitled, "Typical Folly: Evaluating Student Performance in Higher Education," cited a number of interesting points. He pointed out that a rather universal unhappiness with letter grading has led to a startling inflation of good grades across the land with no concomitant increase in student accomplishment. It is his belief that if grades have become so objectionable, and if they are such poor meansures of both performance and competence then it is time to replace them. He advocates written evaluation reports and a system of credit-no credit records.

Roy Cox (1973) in an article entitled, "Traditional Examinations in a Changing Society," sees education as being viewed by many as an expression of knowledge and skill rather than its acquisition. He states that competence on examinations cannot and is not synonymous with academic competence. He cites a number of studies that demonstrate the poor relationship between grades and accomplishment, and advocates a review of our grading practices.

Don W. Brown (1972) in research study entitled, "The Pass/Fail Tale," compared a group of pass/fail students with those receiving traditional (letter grades) evaluation. He discovered there was no difference in the number completing the course; no difference on examinations; and the instructors tended to rate the pass/fail group equal or superior to the traditional. He also discovered that three-fifths (3/5) of those experiencing the pass/fail option preferred it.

Ward Cromer (1969) reports on a research study entitled, "An Empirical Investigation of Student Attitudes Toward the Pass/Fail Grading System at Wellesley College." A questionnaire was given to 300 students (women). Chief among their reasons for taking a course pass/fail was worry about grades; possibility of lowering GPA; and lack of interest in the course (or the reverse). Most of the students quizzed liked the option and found that they were less anxious in the course.

Peter Filene (1969) in a research study at the University of North Carolina entitled, "Self-Grading: An Experiment in Learning," discovered that students tend to mistake enthusiasm for achievement and that the conventional grading system encourages the misconception that the grades are a measure of achievement. The author is hopeful that conventional grading will give way to pass/fail and that students will, in some way, be involved in their own evaluation.

Robert Grogan (1972) investigated student attitude, in regard, to grading in a study entitled, "Student Input in Changing Grading Systems." He discovered that 60% of those who returned the questionnaire thought that pass/fail made it possible to explore non-major subjects without the pressure of grades. Forty percent (40%) of those surveyed thought that learning was enhanced by removing the threat of failure. Interestingly, 60% thought, rather cynically, that the renewed focus on grading systems was really only an effort to cover up other problems in academia.

William Hassler (1969) sent a questionnaire to 276 graduate school Deans asking about the acceptability of pass/fail transcripts. Two hundred and thirty (230) Deans responded and indicated that without question first consideration for acceptance to their programs would be given to those with letter grade transcripts and primarily because they were simply unable to effectively evaluate pass/fail transcripts. Yet, despite Hassler's survey, A. Levine (1973) reported on a survey done by AACRAO in 1972 which indicated that 61% of all colleges had made changes in their grading system.

Robert Heckel (1969) in a paper presented at the South Psychological Association was concerned about the effect of grading on academic achievement, in particular, recording failure. It is his opinion that recorded failures are negative reinforcers and advocates an honors-pass system as a more positive approach. He also believes that criterion examirations ought to be developed in an effort to more realistically measure breadth and quality of student knowledge. Yet, Max Marshall (1973) is concerned about precisely the opposite. He thinks it is wrong or at least unfortunate if both the student and instructor is deprived of the possibility of failure. He is particularly upset with the notion of a pass-no record system which would not allow a student to recognize inadequate performance and strive to improve.

Richard Hunt (1972) in an article entitled, "Student Grades as a Feedback System," feels that college grading puts undo pressure on the students. He believes the practice (grading) conditions the student to focus on grades rather than education as the goal of academia. It is also his belief that grades are not and never have been a sufficient motivation for academic achievement. He recommends the development of a multiple grade feedback system involving: student judgment, instructor judgment; testing to compare student with student; testing to compare student with National level of achievement; and a system of student status based upon credit-no credit.

Ralph Hahn (1973) in an article entitled, "Grades, Grades, G[illegible] the Social Process," is concerned about the current effort to either do away with grades or to significantly alter the present system. It is his opinion that although grading has its weaknesses it is by far the best tool we have to predict future performance. He also believes that many students are motivated to learn simply by grading. Of special concern to him is the trend toward an increasing number of above-average grades which suggests a subtle form of dishonesty. It is his fear that if grading credibility is lost then the something that takes its place may even be less reasonable.

In an unpublished report Avro Juola (1974) supports Hahn's concern as to the trend toward grade inflation. Juola says that the grade inflation between 1960 and 1970 was in the order of 40%. Incidentally, he also pointed out that pass/fail was not a factor because of its rather limited use.

An extremely interesting survey was done by Charles Johansson (1971) investigating three questions. Who chooses pass/fail? Why do they choose it? What is the impact on academic performance? He discovered that the ungraded option is chosen most frequently by those with high cumulative averages. When asked why they chose the option they cited, course difficulty, effort to reduce credit load, effort to concentrate on major, effort to reduce grading tension, and course interest without fear of lowering their grade point average. In regard to academic performance, grades between the two groups (graded and ungraded) were not significantly different.

A. J. Magoon (1972) conducted a comparison between those electing pass/fail as against those who accepted traditional grading. He discovered that those who elected the pass/fail option had a level of expectation similar to those expecting B's and C's. The pass/fail group also experienced high absenteeism, high course and instructor satisfaction, and a relaxed feeling relative to the course. G. W. McLaughlin (1972) also compared pass/fail and conventionally

graded groups and discovered that grade point average tended to increase as the student took a higher percentage of pass/fail courses.

William Saunders (1972) in an article entitled, "User Experiences with Non-Traditional Grading Systems," discovered that students with non-traditional grades are handicapped both in their effort to find employment and gain acceptance to graduate school. His findings were supported by Stevens (1973) and Schoemer (1973). Schoemer's study indicated that if more than 10% of the total transcript was non-traditional, the admission to graduate or professional school was seriously jeopardized. The problem is a question of procedure, graduate school personnel simply do not know how to evaluate non-traditional grades.

What the literature seems to be saying is that traditional grading practices are under criticism and that the notion of pass/fail is presented as a possible alternative or substitute. There are advocates and opponents on both sides of the issue, but as usual very little hard data to support either position. Even those studies that purport to objectively evaluate the issue rarely demonstrate any concerted effort to control possible intervening variables. To compare those who elect pass/fail against those who accept traditional grading and not make a sincere effort to account for variances in ability and motivation is to say nothing valid as to the impact of the grading system choice. This study is a modest effort to design a controlled survey that may add to our understanding in regard to the impact of grading systems on learning and hopefully assist York College with its decisions relative to the pass/fail option.

5. Definition of Terms

The following terms are defined for the purpose of the study.

a) Pass/Fail - A student may elect certain courses on a pass/fail basis and only the student and the Records Office is aware of the choice.

b) Traditional Grading - If a student does not elect pass/fail his grades are recorded on his transcript in the traditional "A,B,C" manner.

c) Course Load - Number of course credits the student is carrying during the semester that he elects as pass/fail option.

d) Course Grade - At York College only the student and the Records Office know that a course has been elected pass/fail. The professor grades all students enrolled in his class in a traditional manner.

e) Numerical Equivalent of Letter Grade - A = 4.0
B = 3.0
C = 2.0
D = 1.0
F = 0

f) Independent Variable - Pass/fail or traditional grading.

g) Dependent Variable - Course grade.

h) Control Variables - Sex, intelligence, academic achievement, class status, course load, major (stratified random sample).

i) Intervening Variables - Energy, values, special abilities, health (some of these will be partially controlled through random selection).

6. Limitations of Study

a) The relatively small sample(122)and the peculiarities of the College Community will certainly limit the generalization of results.

b) The intervening variables and basic assumptions will also influence and limit the accuracy and validity of the study.

7. Basic Assumptions

a) It is assumed that subject matter acquisition and academic achievement (course grade) are reasonably synonymous.

b) It is assumed that academic achievement can be realistically measured.

c) It is assumed that the limitations of the study will not adversely effect the results.

d) It is assumed that if a research project is carefully designed and meticulously executed that the results will tell something worth knowing.

8. Procedures for Collecting Data

a) The study involves two groups of York College students (Pass/fail and Traditionally Graded) enrolled in an "Introduction to Africa" course (three semesters, 1973-74, same professor).

b) The groups were matched in terms of sex, intelligence (IQ), academic achievement (QPA), class status, and credit load.

c) The study compared the two groups relative to subject matter acquisition as measured by their course grade. (At York College the professor grades all students and only the student and the Records Office is aware that pass/fail has been chosen.)

d) All the information needed for the study was located either in the College Records Office or in the Office of the Academic Dean.

9. Procedures for Treating Data

The following was the procedure for treating the data.

a) Null Hypothesis: Ho: $\overline{x_1} = \overline{x_2}$

b) Alternate Hypothesis: Ha: $\overline{x_1} \neq \overline{x_2}$

c) Level of Significance: $\alpha = .05$

d) Critical t Value: $\pm$ 1.98 (two tailed test)

Ho will be rejected and Ha accepted if

$t > + 1.98$ or $< - 1.98$

10. Data Resulting from the Study

TABLE I

Grade Distribution (Pass/Fail Group)

N = 61
σ = 0.617
$\bar{x}$ = 2.049

TABLE II

Grade Distribution (Conventional Graded Group)

N = 61
σ = 0.715
$\bar{x}$ = 2.295

TABLE III

Critical Value of t	Calculated Value of t
$\pm$ 1.980	- 2.033

Table I records the number of scores in the distribution, the standard deviation, and the mean of course grades within the Pass/Fail group.

Table II records the number, standard deviation, and mean of course grades within the group who experienced conventional grading.

Table III records the critical value of t and the calculated value, indicating a significant difference between the mean grade distributions of the two groups.

TABLE IV

Grade Distribution - Pass/Fail Group
(Total Population)

N = 72
σ = 0.615
$\bar{x}$ = 2.041

TABLE V

Grade Distribution - Conventional Graded Group
(Total Population)

N = 152
σ = 0.692
$\bar{x}$ = 2.223

TABLE VI

Critical Value of t	Calculated Value of t
$\pm$ 1.972	- 1.902

Table IV records the number, standard deviation, and mean of course grades within the Pass/Fail group using the total population and making no effort to control through group matching.

Table V records the number, standard deviation, and mean of the conventional graded group with no effort to control through matching.

Table VI records the critical value of t and the calculated value, indicating no significant difference between the means.

11. Conclusions and Significance

a) The data clearly indicates a significant difference in the grade means between the two groups at the .05 level of confidence which suggests that students who elect the pass/fail option may not be as motivated to learn as those who choose to be graded conventionally (within the context of the study limitations).

b) Implications for York College:

1) Like many institutions across the land York College is grappling with the pass/fail issue. There are advocates on both sides of the question. It is hopeful that this study will present to those who must make decisions relative to the issue, at least, a droplet of hard data in a sea of opinion.

2) It is also hoped that the rather extensive review of the literature included within the study will be helpful to those involved in the decision-making process.

c) Implications for a generalization of the study findings beyond York College:

1) It should be of interest to all educators involved with pass/fail, that from the rather limited perspective of this single study, it appears apparent that learning is significantly effected by an alteration in the grading system. Academic achievement is obviously linked to motivation, and motivation seems to be critically linked to grading practices.

12. Residual Findings

The literature on issue of pass/fail includes a number of studies comparing non-traditional with traditional grading practices, however, invariably it is discovered that there is no significant difference in achievement. It was noticed that in the majority of these studies little or no effort was made to control important intervening variables. Frequently, the comparison was made by simply measuring all those who chose non-traditional grading against those who accepted traditional grading. When this technique was applied to the populations involved in this study, indeed no significant difference in grade means was in evidence.

What this seems to suggest is that when these populations are compared without careful matching, in regard to certain important variables, chance seems to cancel out the difference that may exist as a result of a lowered motivation to achieve.

13. Further Studies

It appears that the entire area of non-traditional grading is wide open to further study. There are simply myriad questions to be answered. For example, although this study finds a singificant difference in achievement between traditional and non-traditional graded students, how valid is a grade as a measure of achievement?

Does a student who receives an A know more about a subject than a student who receives a C? Has a student who has acquired measurable information about subject gained more than one who has possibly experienced a fundamental alteration in his "world view"?

If matched groups are significantly different in achievement as demonstrated by this study, what are the important variables and how do they correlate with achievement?

This has been a small study, at a small school, with a student population that can best be termed provincial. Perhaps, the study should be repeated at other institutions with different populations and in varying geographic locations.

The topic is rich in research possibilities, perhaps even suitable for carefully designed doctoral dissertation.

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